

**ENVIRONMENTAL ASSESSMENT**  
**for**  
**LINCOLN COMMUNITY FUELS HAZARD**  
**REDUCTION PROJECT**

**on**  
**RIO BONITO ACQUIRED LANDS,**  
**VILLAGE TRACT**  
**LANDS INCLUDED IN**  
**Township 9 South, Range 16 East,**  
**Section 28, NW 1/4 SW1/4**  
**Section 29, N1/2 SE1/4**  
**NMPM**

**EA-NM-060-00-037**

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**U.S. DEPARTMENT OF THE INTERIOR**  
**BUREAU OF LAND MANAGEMENT**  
**ROSWELL FIELD OFFICE**  
**ROSWELL, NEW MEXICO**

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## I. BACKGROUND

### A. INTRODUCTION

The Lincoln Community Fuels Hazardous Project is located adjacent to the Village of Lincoln in Lincoln County, New Mexico. The project area is within the Village Tract of the Rio Bonito Acquired Lands and is approximately 120 acres in size. The Village Tract is managed solely by the Bureau of Land Management (BLM). Adjacent ownership is as follows: south of the project site ownership is a combination of State and private; east and west is BLM and private; to the north is U. S. Forest Service (USFS).

The sites are characterized by three major zones: (1) a riparian zone along the Rio Bonito which flows through the south portion of the project area and comprises approximately 20 percent of the area; (2) a terrace zone, or “old fields” adjacent to the riparian zone which comprise approximately 60 percent of the area; and (3) an upland zone which comprises the remainder of the project area. Notable in the riparian zone is a dense encroachment of salt cedar and sacaton. The old fields zone has extensive juniper encroachment with areas of dense sacaton grasses. The upland zone is comprised of scattered pinyon/juniper with light to medium grass loading. Very heavy fuel loadings are evident throughout the riparian and old fields zones.

There are several two-track dirt roads as well as power lines traversing the Village Tract. Improvements include fences, ditches, a buried irrigation line and a well. No livestock grazing is currently authorized on the public lands in Tract 3, nor is it designated as a grazing allotment.

Historically, the Village Tract was under private ownership. The BLM acquired the land in 1995 as a part of the Rio Bonito land exchange. The area was previously used primarily for farming and grazing. Its proximity to the historic Village of Lincoln lends considerable cultural significance to the site. Historical accounts, including photographs of the site indicate a mostly open grassland/cropland setting with few or no trees present.

### B. PURPOSE AND NEED FOR THE PROPOSED ACTION

The opportunity to improve ecological conditions combined with the presence of dangerous levels of natural fuels in the project area indicate the need to change current densities and types of vegetation present. The amount and arrangement of vegetation present in the project area is such that should an ignition occur, catastrophic fire and associated severe loss of property would almost certainly result. Exotic, invader, and introduced plant species have become major components of the plant community leaving native species at a disadvantage. Nutrients and available water are tied up in excess and decadent plant material of all sizes.

The general goal of the proposed action is to reduce the amount of vegetation available to wildfire, and decrease the risk of loss of the Village of Lincoln and other adjacent

property. Other general goals are to increase health, vigor, and competitive ability of the native plant community; reduce the density of exotic, invader, and introduced species; contribute to the available nutrient and water cycles by decreasing the amount of vegetation; and to begin restoring the view to a more open condition of fewer trees which is also more fire resistant.

#### C. CONFORMANCE WITH LAND USE PLANNING

The proposed action conforms with the Roswell Approved Resource Management Plan (RMP) and Record of Decision (BLM 1997) as required by 43 Code of Federal Regulations (CFR) 1610.5-3.

The proposed action conforms with and is supported by the Roswell Field Office Fire Management Plan (FMP, 1998). Supporting statements are included in the section addressing the Ft. Stanton/Rio Bonito area: "Prescribed burning should be a part of the management direction for this area to reduce the potential for a catastrophic fire escaping the boundary onto private property." Also stated in the FMP, under Preliminary Fire Management Strategies: "Projects will be proposed annually with an emphasis on utilizing prescribed fire to achieve specific resource management goals. These goals will include restoring fire as an ecological process; eradication or control of non-native, invasive plant species; restoring or maintaining wildlife habitat; range improvement and reduction of the build-up of hazardous fuels."

#### D. RELATIONSHIPS TO STATUTES, REGULATIONS, OR OTHER PLANS

The proposed action and alternatives are consistent with the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1700 et seq.); the Clean Water Act (33 U.S.C. 1251 et seq.), as amended; the Endangered Species Act (16 U.S.C. 1535 et seq.) as amended; the Public Rangelands Improvement Act of 1978 (43 U.S.C. 1901 et seq.); Executive Order 11988, Floodplain Management; Executive Order 11990, Protection of Wetlands; and Executive Order 13112, Invasive Species. The proposed action and alternatives are also consistent with the United States Department of the Interior, Bureau of Land Management Record of Decision, Vegetation Treatment on BLM Lands in Thirteen Western States, New Mexico & Oklahoma (July, 1991).

#### E. SCOPING, CONSULTATION, AND COORDINATION

The proposed action is a result of discussions among the staff of the BLM Roswell Field Office and public meetings between the Roswell Field Office, residents of the town of Lincoln and the surrounding area, representatives of the State of New Mexico, and other interested parties, held on September 25, 1999. The Roswell Field Office also coordinated with the Lincoln Historic District Board. Consultation and cooperation between the Roswell Field Office and the aforementioned parties will continue as an integral part of the project.

## II. PROPOSED ACTION AND ALTERNATIVES

### A. PROPOSED ACTION

The proposed action calls for reduction in the significant concentration and buildup of hazardous natural fuels in the project area through a combination of mechanical, herbicidal, prescribed fire and vegetative management.

#### Objectives of the Proposed Action

- 1) Eliminate 80-90% of the present density of juniper. Dominant trees, preferably pinyon, cottonwood, box elder and walnut will be left standing.
- 2) Eliminate 90%-100% of the present density of salt cedar and other noxious, non-native plant species.
- 3) Reduce the amount of standing dead grass present by 50-80%.
- 4) Monitoring the results of objectives 1-3 and providing information from which future management actions can be developed.

The risk of wildfire to the Rio Bonito valley and the historic Village of Lincoln is extreme under current conditions. Therefore, BLM, in cooperation with the Lincoln State Monument, the Lincoln Historic Society, and the residents of the Lincoln Historic District, is proposing vegetative manipulation through a combination of mechanical, herbicidal and prescribed fire treatments within the Lincoln Community Hazardous Fuels Project area. The purpose of these treatments is to:

- Reduce extreme buildup of hazardous fuels
- Restore existing viewshed to a more historical condition.
- Enhance water quality and quantity in the Rio Bonito
- Reduce species such as juniper, salt cedar and decadent sacaton

The proposed project would:

- Reduce high levels of plant material resulting in less available fuel for a wildfire to consume
- Reduce numbers of undesirable plant species present
- Begin to restore the native plant community
- Increase habitat diversity and vigor of plants
- Increase availability of water and nutrients
- Increase the retention of water in the soil, groundwater recharge, and the Rio Bonito streamflow

The proposed project would be implemented upon approval of this environmental

assessment and dependent on availability of funding, personnel, prescription specifications, and environmental conditions such as soil moisture. All prescribed fire activities would be conducted under the parameters of an approved burn plan prepared by the Roswell field Office of BLM.

The general goal of the proposed action is to reduce the amount of vegetation available to wildfire, and decrease the risk of loss of the Village of Lincoln. Other general goals are to increase health, vigor, and competitive ability of the native plant community; reduce the density of exotic, invader, and introduced species; contribute to the available nutrient and water cycles by decreasing the amount of vegetation; and to begin restoring the view to a more open condition of fewer trees which is also more fire resistant. Treatment options of this proposed action would fall under one or more of the following categories.

Mechanical: All saltcedar and most juniper would be removed using a combination of chainsaws and other low impact mechanical methods such as rubber tired or rubber tracked harvesters, or rubber tired tractors, cutting as close to the ground as possible. Useable wood will be made available for firewood, fence posts or other uses, and all unuseable slash would be piled and burned or chipped. No slash piles would be constructed below the cutbank which forms the boundary between the riparian and old fields zones, to avoid the slash being transported by flood waters. Only chainsaws would be used in the riparian zone. In the old fields and uplands other mechanical treatment options such as those listed above may be suitable to thin or remove high concentrations of juniper.

To keep treated areas within the Class III Visual rating the following prescription would be followed:

- No negative impacts would occur to the visual aspects of the area with the removal of saltcedar along the Rio Bonito, Willows and cottonwood trees will fill in where saltcedar would be removed. There would be a lag period of about three years until the cottonwoods and willows establish themselves.
- Juniper trees removed from the valley floor and bench lands would be taken out in a random basis. Pinyon and juniper (P/J) should be thinned but some should remain to allow a pleasing aspect to the view shed. This is especially true where P/J are used to screen powerlines. The resulting treatment would result in a mosaic of P/J interspersed within the valley.
- Prescribed fire would be used as a tool to reduce the high level of plant materials in the valley. Control lines should be placed around P/J, ponderosa pine and oak trees that are to remain in the within the valley floor and the bench lands.

Herbicidal: The application of an approved herbicide would used to treat stumps of saltcedar and juniper. Arsenal (imazapyr) is a herbicide that would be used under this proposed action. Other approved herbicides may be considered for use for the treatment

of other invasive weed species identified during the project.

Prescribed Fire: A two-stage application of prescribed fire would be necessary to successfully and safely treat the project area. In the first stage, all slash piles would be burned. This burning would be conducted under wet conditions such as after a snowfall or light rain which would result in piles being burned but no spread of fire through the grass. The second-stage application would occur by broadcast burning small blocks of the area. Burning would only occur under conservative conditions near the low end of burn prescriptions. Pile burning of the large fuels and subsequent block burning of the remaining fuels under conservative conditions would keep fire intensities low and limit the potential for escape. A strip of unburned vegetation would be left along the Rio Bonito to serve as a buffer.

Burning in the old fields zone would be limited to block burns with sufficient control lines present. Burning in the uplands would occur only when sufficient control lines were in place. All burning in the project area would only occur under the guidance and direction of a specific and approved burn plan. In addition, successive or scheduled applications of prescribed fire would be used as necessary to control fuel buildups.

Best management practices (BMP's) for managing or reducing smoke in the project area would include:

- Remove all tree boles and large limb wood and utilize them for firewood. Since smoke emissions from larger size fuel emits smoke for long periods of time, the preference is not to burn this size class fuel and to remove them in other ways. During the mechanical treatment, the boles and larger limbs of the trees would be removed from the site and made available as fire wood. The remaining smaller branch wood and greenery will be piled for burning during optimal burning conditions or chipped.
- All piles to be burned would have the ignition points covered with an approved covering in order to improve burning during wet weather. At least 1/3 of the pile will be covered. All piles would be kept small. The burn boss would only ignite several piles at a time and would insure that all piles are "chunked" or stoked to ensure complete consumption.
- The burn prescription would be developed to incorporate wind directions from up canyon (westerly winds) which would push smoke down canyon to the east and northeast, the predominate wind direction.
- A press release and information flyers would be released at least one week prior to any anticipated burning. Any residents within 1/4 mile of the project site to the east would be personally visited by a BLM employee. Signs would be posted the

days that burning is being done on the project site.

- During any burning of grasses (sacaton and short grasses) the burn boss would ignite only small areas at one time. Small areas would be 150 by 150 feet. The burn would consume quickly and smoke should dissipate within a short period of time. The burn team would then wait and mop up any residual smoke before igniting a new area. Burning grasses emits large quantities of smoke for a short period of time. By burning, using short intervals, these emissions would be reduced and spread out over a longer period. This method would not reduce overall emissions, but will lengthen the time for emissions to dissipate. This would reduce inconvenience to the surrounding neighbors.
- All prescriptions would be developed with an objective to reduce the amount of smoke emissions in the project area. Other BMP's would include;
  - Burn fuels when they are cured and dried out.
  - Use ignition techniques and methods that would consume fuels quickly.
  - Utilize optimum weather conditions and low fuel moisture reading which would allow for the quick and complete consumption of the fuel.

Burn Plans written to manage the use of prescribed fire would incorporate these BMP's in order to mitigate the negative affects of smoke of local residents and visitors to the area. Any permit restrictions and smoke compliance plan for the New Mexico Air Quality Bureau would be followed.

Vegetative Management: Pole planting of desired species, chiefly willows and cottonwoods, would occur where feasible. Livestock grazing in areas could be used as a tool for vegetative management and would only be implemented after the completion of a site-specific plan. Livestock grazing would be limited to specific time periods in specific areas to remove or trample excess amounts of grass.

## **B. NO ACTION ALTERNATIVE**

Under the No Action Alternative, no treatment of any kind would occur. Natural fuel levels would continue to increase resulting in an even more serious fire hazard than is now present. Exotic, invader and introduced species, which would continue to out-compete native species, would continue to establish themselves, expand the area they occupy, and supplant native species. Water and nutrient cycles would remain at a reduced level, and the plant community vigor would continue to decline.

## **C. ALTERNATIVES CONSIDERED BUT DROPPED FROM FURTHER CONSIDERATION**

**Broad Application Chemical Treatment Only-** dropped from further consideration



because herbicide use alone would increase the amount of dead plant material available to fire should an ignition occur (increased fuel loading).

### **III. AFFECTED ENVIRONMENT AND ENVIRONMENTAL IMPACTS**

The following critical elements of the human environment have been considered but are not affected or impacted by the proposed actions: Hazardous Waste, Wild/Scenic Rivers, Wilderness, Prime/Unique Farmlands, Native American Religious Concerns, Areas of Critical Environmental Concern, Socio/Economics, Low Income and Minority Populations, and Environmental Justice.

#### **GENERAL SETTING**

**Topography:** The project area is divided into three zones: the riparian, the old fields, and upland zones. The riparian zone is the area along the Rio Bonito including the stream channel itself and the area between the stream edge and the cutbank. The riparian zone is where the highest amount of urban interface and available fuels are located. This zone is also where the first treatment would occur.

The old fields zone is the area between the cutbank, which parallels the Rio Bonito, and the base of the hills where the slope starts to steepen. There are high amounts of vegetation present in this zone but no direct urban interface. The area was historically used as crop land but has since grown up with sacaton and juniper and some salt cedar. This is the second area that would be treated.

The uplands are on the slopes above the old fields. At this time, there is no treatment proposed for the uplands under this proposed action, however, thinning of the juniper population to more historic levels may be a possibility.

**Climate:** The climate is semi-arid with normal monthly temperatures ranging from 35°F in January to 70°F in July at Fort Stanton (Kunkel 1984). Observed minimum and maximum temperatures were -28°F and 101°F, respectively. Average annual precipitation is 13.9 inches with average annual snowfall of 20 inches. Annual precipitation has ranged from 6.1 inches to 25.6 inches, and snowfall has been as high as 64 inches (Kunkel 1984).

**Vegetation:** The diversity of vegetation is due to the physiographic location of the Village Tract, a narrow valley with river bottom and live stream bounded by steep limestone hills. The vegetation is generally comprised of pinyon-juniper uplands on the south-facing slope of the valley wall; grasslands at the toe of the slopes and upper terraces of the floodplain; riparian-wetlands along the stream channel; woodlands along the highway right-of-way, old irrigation ditches and fields; irrigated fields on the upper terraces above the riparian zone.

The uplands are dominated by one-seed juniper with scattered pinyon pine and mountain

mahogany. Some major understory species include blue grama, sideoats grama, wolftail, fulffgrass, threeawn grass, and prickly pear.

The grasslands are dominated by alkali sacaton and giant sacaton, with scattered four-wing salt bush and wolfberry. Other grassland species include hairy grama, creeping muhly, scarlet globemallow, and broom snakeweed. The overstory consists of Arizona walnut, box elder, scattered and cottonwood, and invading junipers.

The riparian area adjacent to the stream consists of an overstory of salt cedar and Russian olive which have invaded the site, scattered cottonwood, willow and box elder. Some of the major ground covers include tall fescue, Kentucky bluegrass, Canada wild rye, and yellow clover. Aquatic plants such as sedge, cattail, and rabbitfoot are found in some areas. The present riparian community along this segment of the Rio Bonito is generally in fair to good condition.

Woodlands are found along the old river channels, irrigation ditches, the edges of cultivated fields, the US Highway 380 right-of-way, and the break between the uplands and the floodplain of the Rio Bonito. One-seed juniper, box elder, Siberian elm, New Mexico locust tree, gambel oak, and Arizona walnut are the tree species on these sites. The understory consists of blue grama, western wheatgrass, vine mesquite, four-o'clock, and shooting star.

**Fuels/Fire History:** The primary fuel (carrier of the fire) in the riparian zone is mixed grasses with a numerous areas of sacaton. Predicted fire behavior would be characterized by rapid, intense fire spread. Numerous trees, such as saltcedar, cottonwoods and willows are found along the stream coarse. Both one-seed juniper and alligator juniper are also found away from the creek but also in the riparian zone. Short, scattered independent torching and crowning of these trees would be expected under certain weather conditions. Because of shading of the fuel bed and higher humidity along the stream coarse, it would be anticipated that fire behavior would be a concern only under extreme weather conditions. Fire behavior away from the creek bed would increase as the lower humidity and a more open canopy of trees would allow fire weather conditions to exhibit more influence on the fire. Estimates of flame lengths burning in sacaton, under dry and windy conditions, range from 10-14 feet. This would make direct fire suppression efforts ineffective and a safety concern for firefighters.

On the terrace above the riparian area, sacaton grasses and other species of tall grasses are numerous. These grasses would exhibit rapid and intense fire behavior. Under windy conditions, this fuel model would produce high rates of spread and long flame lengths. There are numerous mature juniper trees that stand 20-30 feet tall. Many of the juniper trees have interlocking crowns, a major contributor to fire spread in the crown of trees. These junipers mixed in with the tall grasses of this zone represent a major concern in fire suppression. The potential for torching and crowning in these juniper trees would be

high. As these trees torch, fire behavior would be characterized by long range spotting (up to 1/4 mile). This long range spotting would increase the threat of property damage to surrounding private lands.

The upland zone of the project is characterized by short grasses and are the primary carrier of any fire in this zone. As the project area ascends the hills, poor, shallow soils create a fuel bed that is broken up by rocky soils and some barren ground. Some pinyon-juniper is mixed with some small brush species and desert succulents in this zone. Under windy conditions, fires would continue their rapid fire behavior. Fire behavior would be influenced heavily by weather and topography more than fuels within this zone.

**Lands/Realty/ROW:** There are three rights-of-way using an existing road which historically has been used as access to private land. The proposed action would not affect this use nor would the no-action alternative.

**Minerals:** The minerals within the acquired lands along the Rio Bonito are not owned or managed by the federal government. The Proposed Action will not affect the BLM's management of minerals on these subject lands.

## DESCRIPTION OF THE AFFECTED ENVIRONMENT AND ENVIRONMENTAL IMPACTS

**Air Quality:** The Village Tract is surrounded by the Village of Lincoln and the surrounding private property. The Capitan Wilderness is located approximately six to seven miles north of the project site and is classified as a Class I airshed. The Wilderness Act, Public Law 88-577, provides for the preservation of the pristine scene, meaning, any significant amounts of smoke from a prescribed fire may impact the scenic values of this area. Prescribed fire projects associated with the Proposed Action would generate smoke emissions.

### Environmental Impacts:

Burning under poor smoke dispersal conditions may impact residents, village visitors and motorists on US Highway 380. Potential impacts of smoke could have serious consequences on motorists traveling on Highway 380. Accidents, injuries and fatalities have occurred when smoke from prescribed burns have settled in on roads and highways.

Smoke impacts could also be serious on local residents such as the elderly, people with asthma and other upper respiratory ailments.

Under the Proposed Action and using the BMP's for prescribed fire, the impacts of smoke on the Village of Lincoln, residents of private property surrounding the project area and the Capitan Wilderness Area would be short term and transitory.

Smoke from pile burning would impact air quality in the immediate area for up to 72 hours. By removing the tree boles and large limbs from any piles, the burnout time would

be reduced to about one hour. This practice would also reduce possible impacts to motorists on nearby Highway 380. Using smoke emission models, the total suspended particulate was reduced from 1.67 tons (with large boles and branchwood) to .41 tons with that material removed.

Burning grasses and small limb wood can have a immediate, but short term impact on air quality in the immediate area. The burn out time for grasses and branch wood is usually less than 60 minutes. Residual burning of this size of fuel will be much short than the large boles and limb wood. Therefore, the size of the fuel being burned has a causative affect on the duration of the air quality impacts. The smaller the fuel being burned, the shorter the smoke impact would be.

The No Action alternative would avoid all impacts to air quality. Under current fuel levels, however, a catastrophic wildfire in the project area would result in heavy smoke production and a prolonged impact to the Village of Lincoln and the Capitan Wilderness Area.

**Water Quality:** The New Mexico Water Quality Control Commission (WQCC) has been delegated water-quality management responsibilities under the federal Clean Water Act. They have assigned unique numbers to stream reaches in New Mexico and designated uses for those reaches (WQCC, 2000a). The Rio Bonito below Angus has been identified as Segment 2208. The project area includes approximately one mile of the Rio Bonito within Segment 2208. The designated uses for this reach are fish culture, irrigation, livestock watering, wildlife habitat, a coldwater fishery, and secondary contact (e.g., wading).

The WQCC (2000a) also established water quality standards to protect the designated uses, and directs periodic water quality assessments to ensure that standards are met. According to the WQCC (2000b), Segment 2208 is not fully supporting its coldwater fishery or irrigation use due to stream bottom deposits (i.e., sediment). The probable sources of the sediment were listed as agriculture, removal of riparian vegetation, streambank modification/destabilization, and other unknown sources.

## Environmental Impacts

The Proposed Action would improve water quality somewhat from current conditions and would help fully support the stream designated uses over time. Removing brush, such as saltcedar and juniper, would increase herbaceous ground cover, thus allowing more sediment to be filtered out of overland flow before it reaches the stream. Enhanced infiltration and ground-water recharge would increase stream base flows, which would improve water quality by simply having more water instream.

Some minor, adverse impacts to water quality could occur for a short period during and after project implementation. Soils would be disturbed as vehicles are driven in the treatment area, and would be prone to erosion prior to regrowth of ground cover species. The soil disturbance could result in a short-term, minor amount of sediment loading, though rapid regrowth of ground cover species would quickly offset these effects. No impacts to water quality would be expected from the small amount of herbicide use following label instructions. None of the benefits provided by the Proposed Action would be realized under the No-Action Alternative.

**Soils:** The Gabaldon-Riverwash association is the only soil unit found in the treatment area (USDA Soil Conservation Service 1983). The Gabaldon soil is common on the valley floor and stream terraces. It is very deep and well-drained. The surface layer is silt loam with a moderate hazard of water erosion, but a high risk of wind erosion. The Riverwash is found on the floodplain and in the ephemeral drainages. It is coarse sediment that can be reworked during periods of flooding.

## Environmental Impacts

The Proposed Action would improve protection of soils from erosion, and enhance soil productivity in the long term. Removing brush, such as saltcedar and juniper, would increase herbaceous ground cover, thus protecting the soil surface from wind and water erosion. Prescribed fires would rapidly cycle nutrients back to the soil, also enhancing ground cover. Infiltration rates would be enhanced, so the limited precipitation in the area would be used more efficiently.

Some minor, adverse impacts to soils would occur for a short period during and after project implementation. Soils would be disturbed as vehicles are driven in the treatment area, and would be prone to erosion prior to regrowth of ground cover species. Regrowth should be rapid, however, because of the relatively moist environment of the stream corridor. None of the benefits provided by the Proposed Action would be realized under the No-Action Alternative.

**Floodplain:** The treatment area includes approximately one mile of the Rio Bonito and associated floodplain. Abandoned floodplains, or terraces, comprise the remainder of the area. The floodplain has been changed from prehistoric conditions by agriculture, livestock grazing, residential development, road construction, manipulation of streamflows, alteration of the stream channel, and brush encroachment.

For BLM administrative purposes, the 100-year floodplain provides the basis for floodplain management on public lands. It is based on maps prepared by the Federal Emergency Management Agency (1983). The 100-year floodplain

ranges in width from about 300 feet to 600 feet in the treatment area, and includes about 50 acres.

## Environmental Impacts

The Proposed Action would improve floodplain functions, and benefit the stream corridor overall. Reducing the amount of standing vegetation in both the overstory and understory would lessen the risk of flood damage near the treatment area by making the conveyance of flood flows more efficient. Removing brush, such as saltcedar and juniper, would increase herbaceous ground cover, thus enhancing infiltration rates and ground-water recharge in the floodplain. This would reduce flood peaks and enhance stream base flows, thus increasing the amount of water available for resource needs and other uses. Greater vegetation ground cover would also filter sediment from overland flow before it reaches the stream, thereby protecting water quality. None of the benefits provided by the Proposed Action would be realized under the No-Action Alternative.

Non-native, Invasive Species: On February 3, 1999, the President signed Executive Order 13112 (EO), Invasive Species. The EO dictates that “each Federal Agency whose actions may affect the status of invasive species shall, to the extent practicable and permitted by law: prevent the introduction of invasive species; detect and respond rapidly to and control populations of such species in a cost-effective and environmentally sound manner; monitor invasive species populations accurately and reliably; provide for restoration of native species and habitat conditions in ecosystems that have been invaded; conduct research on invasive species and develop technologies to prevent introduction and provide for environmentally sound control of invasive species; and promote public education on invasive species and the means to address them.” The Noxious Weed Management Act of 1998 for the State of New Mexico finds that noxious weeds have caused extensive economic damage in New Mexico.

Specifically, the presence and spread of noxious weeds: decreases land values and productivity, forces out nutritious forage for livestock and often causes the death of livestock and crops; harms the environment by crowding out native vegetation and endangered species, increasing fire danger, increasing water usage; and; increases government and industrial costs by increasing highway cleanup costs, decreasing the lease value of state and federal public lands and curtailing the hunting, fishing and recreational use of the land.

“Class A” weeds are considered to be non-native species with limited distribution in New Mexico. Preventing new infestations and eliminating existing infestations is the highest priority. “Class B” weeds are non-native species that are presently limited to portions of the state. They are designated for control in regions where they are not yet widespread. Preventing infestation in these areas is a high priority. In regions where a “Class B”

species is already abundant, control is decided at the local level with containment as the primary goal. "Class C" weeds are other non-native weeds found in New Mexico. Many of these are widespread in the state. Long-term programs of suppression and management are a local option, depending upon local threats and the feasibility of management in local areas.

The proposed project site is known to have populations of saltcedar (*Tamarix spp.*), a Class C weed, musk thistle (*Carduus nutans*) and teasel (*Dipsacus fullonum*), both Class B weeds. Poison hemlock (*Conium maculatum*), another Class B weed, may also be present.

Saltcedar, also called tamarisk, was introduced from Eurasia. It is now found along floodplains, riverbanks, stream courses, salt flats, marshes and irrigation ditches. It often forms pure thickets that can extend for miles. It is one of the most widely distributed and troublesome weeds along water courses. Saltcedar is a facultative phreatophyte. Its roots may penetrate soil 30 feet or more, but the plant cannot survive if moisture is suddenly removed from the root zone. Saltcedar is a fire-adapted species. The high water and salt content of saltcedar foliage make it difficult to burn. Saltcedar sprouts vigorously from the root crown and rhizomes after burning. Saltcedar exhibits increased flowering and seed production after fire. Saltcedar generally survives fire, although very hot fires may prevent sprouting. Prescribed burning alone may not be an effective control method for saltcedar. However, burning followed by herbicide application is effective. ((Brotherson, 1987). Saltcedar stands also consume large amounts of ground water. Robinson(1965) cited studies which indicate tamarisk consumes on the order of 4 acres feet of ground water annually. Sala et al. (1996) noted that tamarisk stands may have significantly more leaf area per unit of ground area than stands of native riparian vegetation. If so, the tamarisk stands would use more water per unit of ground area than the native stands and, replacing the tamarisk stands with native species would save water. (Nature Conservancy, Carpenter, Alan T.)

Musk thistle is biennial or sometimes a winter annual, which grows up to 6 feet tall. It was introduced to the U.S. in the early part of the 20<sup>th</sup> century and is now widespread throughout the U.S. and Canada. It is native to Europe and western Asia. It invades pasture, range and forest lands along roadsides, waste areas, ditch banks, stream banks and grain fields. It spreads rapidly forming extremely dense stands which crowd out desirable forages and vegetation. (Weeds of the West,1992) The rosette forms in the first year, the flowering stem elongates in the second year. Each plant can produce as many as 20,000 seeds, of which 90 percent are viable. The seed can lay dormant in the soil and successfully germinate after ten years. This plant reproduces from seed alone.(Wyoming Weed Council, Weed Handbook, Series 1-55)

Teasel is also a native of Europe. It is spreading rapidly in moist sites, especially along irrigation ditches, canals and disturbed sites. It is a stout taprooted biennial which also

grows to a height of 6 feet. A rosette is produced the first year, followed by bolting in the second year. The spiny heads can reach lengths of 2 inches (Weeds of the West, 1992).

Poison hemlock is a biennial native to Europe and can grow from 6 to 8 feet tall. It occurs on borders of pastures and cropland, gradually invading perennial crops such as alfalfa. It tolerates poorly-drained soils and frequents stream and ditch banks. All plant parts are poisonous including the large white taproot. It has been mistaken for parsley. The stems of poison hemlock are covered with purple spots at all growth stages (Weeds of the West, 1992)

## Environmental Impacts

The Proposed Action would enhance the vegetative species composition, and begin the return to a natural community. Reduction of the existing populations of invasive, non-native species would release nutrients as well as reducing competition for those nutrients and space by the native species.

The immediate impacts of the proposed prescribed fire would open up areas currently occupied by saltcedar and sacaton. Followup with a herbicide application to the saltcedar by stump painting should reduce root crown sprouts, while a herbicide application to germinating seeds and rosettes of musk thistle, teasel and poison hemlock will allow for native vegetation to become well established. Monitoring of the project site after the burns will be required, so follow up treatments can be made at the appropriate time. If followup monitoring and maintenance are not done, the project area will return to the current situation. All herbicide treatments will be in compliance with the herbicide labels and Appendix 9 of the Roswell RMP and the BLM Vegetation Treatment Environmental Impact Statement, 1991.

The No Action Alternative would result in a “Status quo” situation. The stands of saltcedar would increase, invasive musk thistle, teasel and poison hemlock would continue to expand in population size. Native vegetation would decrease, productivity would decline and a monoculture of invasive species would become established. As the site is close to the town of Lincoln, use of the area would not be conducive to recreationists, such as bird watchers or picnickers, as noxious weeds are not extensively used by wildlife and have a tendency to be irritating to pass through. The site would also become a “nursery area” or seed source for noxious weeds, spreading up and down the Rio Bonito valley.

**Fire Regime:** The historic fire regime for the Lincoln Valley is low intensity, low frequencies fires. Historic fire causes are natural ignitions-lightning, and land management burning. In recent years, with the increase in residential use and home building in the valley there have been several fires associated with residential activities. These activities are trash burning and equipment use. Travelers on Highway 380 have contributed to several



roadside ignitions. With the increase in fuel loading due to successful fire suppression activities over the past 75 years, the fire regime has slowly changing to one of low frequency but high intensity. The potential for damaging catastrophic fires is increasing because of the absence of any kind of vegetation management in the area. The vegetation that is now present in most areas around the village of Lincoln has created the potential for a large catastrophic wildfires which could threaten life and property around the village of Lincoln.

The current fuel mix is approximately 75 percent grasses of the 2 to 3 foot tall class, mixed with juniper and pinyon trees. The current fire behavior environment as modeled by the BEHAVE program is as follows:

On a moderate fire weather day, fire behavior would exhibit the following traits. Fire forward rate of spread would be approximately 162 feet a minute. Flame lengths in the grass would range up to 15.9 feet. The fire intensity level would be 2329 btu/ft/sec. Initial attack would be impossible as the intensity of the fire would drive fire fighters away because of the extreme heat.

The 25 percent of juniper and pinyon trees would add to the fire intensity. Fire behavior would increase as flame lengths would grow to 22.6 feet and fire intensity levels would become 4989 btu/ft/sec. The forward rate of spread would fall to 101 feet per minute as the fire intensity would cause the main intensity to go upward into the smoke column (convection) and not outward (rate of spread).

Although the forward rate of fire spread would be less, the fire intensity would be double in the intermix of grass and trees. In addition to the fire intensity being so great, most of the juniper and pinyon trees would burn up through the tree crown, tossing burning embers into the smoke column. The BEHAVE program modeled this “spotting” as being serious. Burning embers could be carried up to 0.3 miles down wind for the smoke column, starting new fires, possibly on the roofs of nearby structures. This type of wildland fire can be very damaging and hard for personnel and equipment to suppress.

## Environmental Impacts

Under the Proposed Action, removing (treating) the greater part of the juniper and pinyon trees and reducing the 2-3 foot grasses, the fire behavior would significantly change. The desired environment would be one of shorter grasses and very few trees. The fire behavior environment as modeled by the BEHAVE program would be as follows:

A potential wildland fire would have a forward rate of spread of 49 feet per minute. The fire intensity level would be 424 btu/ft/sec which is considerably less than the non treated model. The flame lengths would range up to 7.3 feet. Although, still an intense fire, firefighters and equipment should be able to apply

direct suppression techniques to the fire edge. The intensity level of a fire in this fuel type is much more manageable under normal weather conditions.

Removing the juniper and pinyon trees also would lessen the “spotting” potential. Grasses do not normally spot and if they do, it is just a few feet, not tenths of miles. Eliminating the trees, would also eliminate the “spotting” problem. Under the No Action alternative, fuels continue to accumulate and the fire hazard increases.

Vegetation Management:: Pole planting of desired species would occur where feasible. Successive or scheduled applications of prescribed fire would be used as necessary to control fuel buildups. Livestock grazing is a possible tool for vegetative management on these tracts. The goal would be to maintain fuel loading at a desired level. Limited grazing in areas for specific time periods may be used to remove or knock down excess amounts of grass. Before grazing could be implemented, however, some fence repair and possibly construction will have to be accomplished.

To authorize grazing, BLM would need to complete site-specific plans for these tracts. This environmental analysis does not analyze the impacts of livestock grazing on this tract and would not be used to authorize livestock grazing.

## Environmental Impacts

The impacts of the proposed grazing would be a reduction, on a periodic basis, of the standing vegetation; which would help achieve the objectives of reduced fire hazard, and retard the spread and encroachment of juniper. The grazing by a relatively large number of livestock for a limited period of time would help maintain the native species without any adverse impacts to the water, soils, or vegetation. Grazing of the riparian area during the winter months would have little or no impact to the regeneration of the willow and cottonwood species. Under the No Action alternative there would be no reduction in the amounts or arrangement of vegetation.

Terrestrial and Aquatic Wildlife Habitat: Situated in the foothills of the Capitan Mountains to the north and the Sacramento Mountains to the west, and being located along the Rio Bonito, the area provides diverse habitat for a variety of wildlife species. The presence of water, shade and forage in the valley attracts numerous terrestrial and avifaunal wildlife species. The Rio Bonito valley serves as a natural corridor between the higher elevations and the lower foothills for numerous wildlife species. The presence of human habitation (Lincoln, private homes, croplands, roads, etc.) in the valley adds to the diversity of habitats, and to some extent, limits the use of the area by some wildlife species due to harassment and disturbance, while encouraging greater use of the area by more tolerant species. The aquatic habitat and associated riparian vegetation of the Rio Bonito supports native and game fish populations, numerous aquatic/benthic organisms,

and many other invertebrate species relied upon by fish and wildlife. A variety of herptile species can be found in the area.

A description of habitats and specific wildlife species that utilize the area is found in the Fort Stanton Habitat Management Plan (NM-6-WHA-T5). Fort Stanton is located about six miles upstream from Lincoln and provides similar habitat along the Rio Bonito, less human habitation, developments, croplands etc.

The three zones, or habitat types, form a mosaic over the project area due to: (1) the meandering nature of the Rio Bonito channel; (2) previous habitat disturbances such as croplands and orchards (old fields) that are now fallow and showing signs of reverting back to grasslands, albeit with juniper encroachment, and; (3) past livestock use patterns of both uplands and the riparian zones, and now with a period of non-use allow for the accumulation of vegetation in some areas.

The riparian zone varies in width along the Rio Bonito and in vegetative structural diversity. The straighter reaches tend to have a narrower riparian area versus bends in the river where most of the larger trees (native and non-native) are found, and directly behind Lincoln. Several reaches are lined heavily with saltcedar. There are a few cottonwood trees in the area, but regeneration is not apparent. Saltcedar outcompetes native tree and shrub species that could be found in the riparian area, while not providing quality habitat for wildlife.

The old fields are frequently use by wildlife due to their open spaces and scattered trees, screening by the larger rows of trees found along old irrigation ditches, and being somewhat a more removed in distance from Lincoln. The fields south of the river were once more open grassland habitat that have begun showing signs of reverting back to that type. The vigor of grassland species is low and numerous weed species still dominate the old fields. An old orchard has numerous decadent trees, including dead trees that have closed up the understory in one site along the west boundary of the orchard. In one area, on the north side of the river, an old field has become dominated by juniper invading from the uplands. The high density of juniper trees in this area has overshadowed the open grassland aspect, making the area somewhat less desirable for wildlife species that prefer a more open aspect.

The uplands are the relatively steep valley walls with primarily juniper and some browse species such as mountain mahogany growing on the limestone hills. This area is dissected by numerous draws that serve as movement corridors from the uplands to the bottomlands of the Rio Bonito. As this area is a south aspect slope, vegetation is not as dense as it is across the valley where juniper dominates the slopes.

Because of the juxtaposition of these habitat types in a relatively small and narrow area, a variety of wildlife species will move through and utilize these types for food, cover or water. For avifaunal species, two seasons are important, spring and fall migration in

March and October, respectively, and breeding/nesting season beginning in April. For mule deer, fawning periods beginning in June and rearing young on more succulent forage in the bottomlands, is important. Fish habitat concerns are year-long, primarily water quality, sedimentation, stream shading and base flows.

## Environmental Impacts

The Proposed Action would enhance both terrestrial and aquatic habitat for numerous wildlife species by restoring the area to a more natural condition, removing exotic species, improving riparian areas along the Rio Bonito, invigorating vegetation (grasses and browse species) with the use of prescribed fire, opening up the understory in some areas, creating more open grasslands, increasing ground cover, enhancing base flows, and improving the composition of native plant species (uplands and riparian).

The first beneficial and long-term impact would be realized along the Rio Bonito by the control of saltcedar which will allow native species such as willows and cottonwood to regenerate. Improving riparian function would enhance aquatic habitat through stream shading from native species as they begin growing back (willows, cattails, sedges, bulrush, etc.). The next positive impact would be the restoration of grassland habitat found in the old field areas to benefit those wildlife species that require this habitat type. A minimal impact would be expected from treating the Uplands since not much treatment is being proposed.

The immediate impacts to wildlife would be the displacement of many terrestrial species during the actual firing operations. If not conducted during a time period that considers migration, breeding and nesting, and fawning, prescribed fire could decrease the use of the area by wildlife. The impacts would still be short-term as there are other available sites in the valley.

The No Action alternative would result in static to declining habitat conditions over the long-term. Terrestrial and aquatic wildlife productivity would not improve. The consequence of a catastrophic fire could render the area less productive for a long period of time due to fire intensity. The consequence of a high intensity fire would be magnified by the increased run-off of water, ash and sediment into the Rio Bonito thereby decreasing aquatic habitat conditions for fish and invertebrate species.

**Threatened and Endangered Species:** There are no terrestrial or aquatic threatened or endangered species found on the project site. Therefore, there would be no impacts to these species from the proposed action or the no action alternative.

**Cultural Resources:** The Rio Bonito Valley is known to have been occupied by prehistoric peoples for 6,000 years or more. Archeological sites have been recorded within a few miles of the area proposed for fuel reduction. These sites date from

the Archaic period and extend through historic times. Hispanic and Anglo occupation began in the 1840s. The Village of Lincoln is listed as a National Register District.

The Rio Bonito drainage has not been completely and systematically culturally inventoried. Nearly all of the land near Lincoln in the valley bottom has been held in private ownership since it was first settled in the 1840s and 1850s. Private land is culturally inventoried much less than public land. Currently, the Roswell Field Office archeological records show no sites recorded in the proposed project area. It is likely however that historic and prehistoric remains are present.

## Environmental Impacts

Depending on the alternative chosen, there could be negative impacts to cultural resources. If the Proposed Action is chosen, prescribed fire could destroy any historic wooden structures, should any be present. To avoid damaging historic structures, a reconnaissance survey will be implemented. Any significant historic structures will be protected by constructing fireline around the structures.

Wherever bladed firelines are to be built, a cultural survey would occur prior to blading. Significant archeological and historic sites would be avoided. Since most of the area proposed for burning has a dense vegetative ground cover that hides possible cultural resources, archeological monitoring during the construction of bladed firelines would occur. Should cultural material be discovered during blading, fireline work would cease until the cultural resource issue is resolved. Significant cultural resources would be protected from further disturbance.

**Cave/Karst Resources:** No significant caves or karst features are known to exist on the public lands identified in the Proposed Action. Since no caves have been identified at the present times, the Proposed Action would not affect cave/karst resources. If, after treatment, a cave or karst feature is located, an inventory would be initiated to determine significance and the area may be gated or fenced to protect the resource.

**Outdoor Recreation:** The Proposed Action is located within an area of high potential for recreation activities, however, no activity plan for recreation has been developed and there are no recreation related developments for the area. The Proposed Action would, in the long term, benefit recreation activities by opening vistas, reducing fire risk, and restoring native vegetation to the area. Impacts of the Proposed Action on casual recreation use would be short-term, occurring when the projects are being carried out. The No Action alternative would have little short-term impacts on recreation use of the area.

Visual Resources: The Visual Resources within the proposed area are Class III. The Class III rating means the contrasts to the basic elements caused by the management activity may be evident and begin to attract attention in the landscape. The changes, however would remain subordinate to the existing landscape. The Proposed Action would result in short term visual impacts to the casual observer. The No Action alternative would cause no impacts on visual resources.

#### **IV. CUMULATIVE IMPACTS**

After recovery of the treated area, establishment of herbaceous cover and planting of willows and cottonwoods, the impacts would be expected to accumulate on the positive, as evidenced by expected improvement in water quality, recharge of ground waters, enhanced plant community vigor, and the elimination or reduction of invasive, non-native plant species. This, in turn, would reduce the amount of and arrangement fuels in area. Therefore, the threats of wildfire to BLM lands, private property and the Village of Lincoln would also be reduced.

The No Action alternative maintains the status quo. The threat of fire to BLM lands, private property and the Village of Lincoln would remain high or increase. The No Action alternative avoids short-term impacts while its long term impacts would continue. Fuels would continue to accumulate. Invasive, non-native plants would continue to establish themselves and spread. The condition and diversity of riparian areas would continue to decline.

#### **V. MITIGATION MEASURES**

See the Proposed Action for mitigation measures to impacts.

#### **VI. RESIDUAL IMPACTS**

There is a possibility of trace of amounts of the chemicals remaining in the area after the use of herbicides. These impacts should be short term.

## VII. PERSONS AND AGENCIES CONSULTED

### Residents of the Village of Lincoln and the surrounding area

Jeremy Jordan  
Steve and Kathleen Havill  
Charlotte and David Lee  
Joe and Frances Gallegos  
Reginald and Margaret Richey  
Kay and Lee Rucker  
Sylvia Wilson Zorn  
Henry Sanchez  
Ted Anderson  
Al Sanchez  
Leif Ancker  
Phoebe M. Taylor  
Ira H. Rabke

### Bureau of Land Management Roswell Field Office Staff

Tim Kreager  
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Dan Baggao  
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Pat Flanary  
Helen Miller  
Jim Schroeder  
Irene Salas  
Jim Desmond  
Jerry Dutchover

### New Mexico State Monuments

DeAnn Kessler

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## **IX. APPENDICES**

- Appendix A - Memorandum of Understanding between BLM; the Museum of New Mexico; Hubbard Museum of the American West; Lincoln Volunteer Fire Department; and the Lincoln Historic Preservation Board regarding coordinated fire prevention and preparedness.
- Appendix B - Appendix 9 of the 1997 Roswell Resource Management Plan, Treating Vegetation with Herbicides
- Appendix C - Environmental Assessment No. NM-066-98-044, Noxious Weed Control
- Appendix D - List of Approved Herbicides (BLM Pesticide Use Proposal) and list of pesticides
- Appendix E - Executive Order No. 13112, Invasive Species
- Appendix F - State of New Mexico, Noxious Weed Management Act 1998
- Appendix G - Memorandum of Understanding between BLM; US Forest Service; Natural Resources Conservation Service; the conservancy districts of Lincoln County; Lincoln County; New Mexico Highway Department; and New Mexico State Land Office regarding the management of noxious weeds on public and private lands in Lincoln County.
- Appendix H - Maps